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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,804	07/30/2003	Akihiro Takamura	520.42834X00	9485
24956 7590 10/09/2007 MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			EXAMINER WHIPPLE, BRIAN P	
			ART UNIT 2152	PAPER NUMBER
			MAIL DATE 10/09/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/629,804

Applicant(s)

TAKAMURA ET AL.

Examiner

Brian P. Whipple

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 9-14 are pending in this application and presented for examination.

Claims 1-8 were cancelled by Applicant's amendment on 9/19/07.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 9-14 have been considered but are moot in view of all claims being new and addressed in the rejections below.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crossley, U.S. Patent No. 4,780,821, in view of Brice, Jr. et al. (Brice), U.S. Patent No. 5,414,851.

5. As to claim 9, Crossley discloses a computer system having a virtualized I/O device, comprising:

a client computer comprising a first processor (Abstract, ln. 1-16; the remote computer inherently includes a processor as it is performing operations locally and has

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“existing programs which were designed to run in a non-network environment”), a first hypervisor (Col. 6, ln. 63 – Col. 7, ln. 4) and a first operating system (OS) operating on the first hypervisor (Abstract, ln. 8-16; Col. 6, ln. 63 – Col. 7, ln. 4); and

a server computer comprising a second processor (Col. 6, ln. 57-62), a second hypervisor (Col. 6, ln. 48 – 62), a second OS operating on the second hypervisor (Abstract, ln. 8-16; Col. 6, ln. 48-62), and a resource (Abstract, ln. 8-16; Col. 6, ln. 63 – Col. 7, ln. 4);

wherein said client computer and said server computer are connected via a network (Col. 3, ln. 25-27);

wherein said first hypervisor comprises:

memory protection interrupt processing means called by a memory protection interrupt that is generated when a read or a write occurs to a particular memory address in said first processor (Col. 4, ln. 45-48 and 51-55; Col. 6, ln. 63 – Col. 7, ln. 4; Col. 9, ln. 58 – Col. 10, ln. 37)

logical I/O device access detecting means (Col. 6, ln. 63 – Col. 7, ln. 4) that is called by said memory protection interrupt processing means (Col. 4, ln. 45-48 and 51-55; Col. 6, ln. 63 – Col. 7, ln. 4; Col. 9, ln. 58 – Col. 10, ln. 37) to detect a logical I/O device access, which is directed to said resource of said server computer (Col. 6, ln. 63 – Col. 7, ln. 4);

a virtual I/O client processing module for transmitting to said server computer, via said network, a command to access said logical I/O device when said logical I/O device access is detected (Col. 6, ln. 63 – Col. 7, ln. 4); and

wherein said second hypervisor comprises a virtual I/O server processing module for receiving said command via said network and for issuing a command to said resource (Col. 6, ln. 48 – Col. 7, ln. 4).

Crossley discloses sharing resources across a plurality of computers using hypervisors as discussed above. Additionally, Crossley discloses that server systems sharing printers, which are physical I/O devices, is well known in the art as cited in the background of the invention (Col. 2, ln. 62-64). However, it may be argued that Crossley's invention is directed solely to file resources and application programs in the disclosure of the embodiments and not physical I/O devices.

But it would have been obvious to one of ordinary skill in the art at the time of the invention to extend the teachings of Crossley to physical I/O devices. If the background of the invention alone does not lead one to this conclusion, then additional evidence of this can be found in Brice, which does disclose sharing a physical I/O device (Col. 1, ln. 68 – Col. 2, ln. 3; Col. 2, ln. 26-34).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Crossley by explicitly including physical devices as shared resources as taught by Brice in order to extend the benefits of sharing resources (Crossley: Col. 3, ln. 25-27) to physical devices (Brice: Col. 6, ln. 28-34).

The rationale for this motivation is applied to all dependent claims where appropriate.

6. As to claim 10, Crossley and Brice disclose the invention substantially as in parent claim 9, including communication between said client computer and said server computer is performed on a protocol, which is determined by said first and second hypervisors (Crossley: Col. 3, ln. 47-52).

7. As to claim 11, Crossley and Brice disclose the invention substantially as in parent claim 19, including communication between said client computer and said server computer is performed on a protocol of said second OS, which operates on said server computer (Crossley: Col. 3, ln. 47-52; Col. 6, ln. 53-57).

8. As to claim 12, Crossley and Brice disclose the invention substantially as in parent claim 9, including said virtualized I/O client processing transmits to said server computer said command to access said logical I/O device, after converting said command into a protocol, which the second OS of said server computer is capable of interpreting (Crossley: Col. 3, ln. 47-52; Col. 6, ln. 63 – Col. 7, ln. 4).

9. As to claim 13, Crossley and Brice disclose the invention substantially as in parent claim 9, including said logical I/O device access detecting means detects said logical I/O device access when a cause of said memory protection interrupt is either a read command issuance or a write command issuance to said logical I/O device (Crossley: Col. 4, ln. 45-48 and 51-55; Col. 6, ln. 63 – Col. 7, ln. 4; Col. 9, ln. 58 – Col. 10, ln. 37).

10. As to claim 14, Crossley and Brice disclose the invention substantially as in parent claim 9, including said virtual I/O client processing module comprises:

means for determining whether data written in a memory address for controlling an I/O device is a read command or a write command (Crossley: Col. 10, ln. 44 – Col. 11, ln. 2);

means for, when the data is a read command, transmitting to said server computer the read command and a parameter of the read command (Crossley: Col. 4, ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4);

means for receiving data read out in I/O read processing by said server computer (Crossley: Col. 3, ln. 47-57);

means for, when the data is a write command, transmitting to said server computer the write command and a parameter of the write command (Crossley: Col. 4, ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4); and

means for transmitting data to be written to said server computer (Crossley: Col. 4, ln. 51-55; Col. 6, ln. 63 – Col. 7, ln. 4).

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Whipple whose telephone number is (571) 270-1244. The examiner can normally be reached on Mon-Fri (8:30 AM to 5:00 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on (571) 272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

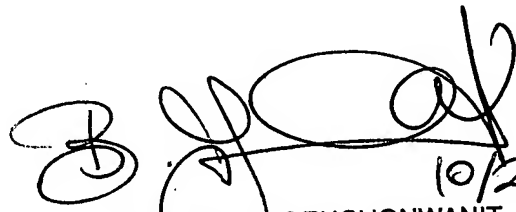


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BPW

Brian P. Whipple  
9/26/07

  
10/2/7  
BUNJOB JAROENCHONWANIT  
SUPERVISORY PATENT EXAMINER